

Nexus Between Tourism and Environment in Bhutan

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Abstract Tourism is one of the largest foreign exchange earning industries in the Bhutan now. The number of foreign tourist inflow in the country has increased significantly in recent years, and is expected to increase more in the coming years as well, as the government gives more priority on the sector. However, its rapid expansion tends to have some detrimental effects on environment. To balance the two conflicting issues, the tourism industry is controlled by a pricing policy- High Value Low Volume (HVLV). With the help of primary data collected from 61 foreign tourists and secondary data of 26 years, using OLS in the first step, elasticity of tourism revenue with respect to tourist flow is measured and in the second step, using semi-log model, growth rate of tourism revenue and three environmental variables (CO₂, PM10 and NRR) are measured. Compared to the stock of environment, tourist inflow in the country has not reached threshold level till now, and the policy of HVLV is found to be effective in balancing revenue and environment in the country.

Keywords Pricing Policy, Environment, Revenue, Tourist

1. Introduction

At present, tourism has become one of the fastest growing industries in the world ([1][2][40]), and probably there is no other economic activity which transects so many industries, levels and sectors as tourism[3]. It contributes approximately 11 percent of global Gross Domestic Product (GDP), making it the world's biggest industry, accounts for 12.2 percent of world exports and 8.1 percent of global employment as of now ([4][5][6][7]). Also, tourism is the only major service sector in which developing countries have consistently recorded trade surpluses and has become a source of income for the naturally rich under developed countries with a natural environment appealing to international tourists[40]. Since nature serves as tourism resources in these countries, the industry has become an environment-dependent, in which tourists are the consumers of environment[8]. Hence, there is a positive correlationship between the environment and tourist flow[3]. It means, as environmental quality increases, number of tourist inflow also increases, but not vice versa. However, in the long run, if it is not managed properly, rapid expansion of tourism and tourists visit have some detrimental effects on environment, including congestion and pollution ([7][9][40]). With the emergence of commercialisation of the industry and the realisation of substantial impact on nature in the recent years, especially after the Copenhagen Conference in 2009, the industry has been sensitised climatically in the world[4].

In the Himalayan Kingdom of Bhutan, tourism industry is grounded on the principle of sustainability, which means tourism must be environmentally and ecologically friendly, socially and culturally acceptable ([2][10][11]). At the same time, the primary objective of revenue generation, especially foreign exchange earning is not set aside[12]. At present, perhaps, Bhutan is the best example in the world where controlled tourism has been effective in ensuring the sustainability of the industry[13]. This credit goes to the country's pricing policy- *High Value Low Volume* (HVLV), and it has been slightly modified recently as- *High Value-Low Impact (negative)*, but the essential principle remains the same[10]. A similar policy with different nomenclatures is also being practiced in some other countries, such as Botswana[14], Canada[15], Netherlands[40], etc.

2. Objectives and Methodology

The present paper is the modest to analyse the tourism policy of Bhutan in balancing economic growth and preservation of pristine environment in the country. The specific objectives of the study are of three folds. One, it is to evaluate the elasticity of tourism revenue with respect to foreign tourist (excluding tourist from SAARC, especially the Indian) inflow in Bhutan. Two, it is to analyse the tourism policy of the country- *HVLV*, in balancing tourism revenue and preservation of pristine environment. Three, it is to identify the threshold level of tourist inflow in the country vis-à-vis the available tourism infrastructures and the stock of environment.

To achieve the objectives mentioned above, two sets of time series secondary data for a period of 26 years from 1985 to 2010 have been collected from different sources, like

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World Development Indicator, Royal Monetary Authority of Bhutan, and Asian Development Bank, etc. The first set of data consists of two variables- number of foreign tourist visited Bhutan during the reference period and its revenue contribution to country's GDP. With the help of simple regression analysis, tourism revenue elasticity was estimated. The second set of data consists of CO₂ emission (in '000 kg), Particulate Matter Concentration (PM10 in μm^3), Natural Resource Rent (NRR in %). With the help of semi-log model, growth rate or relative change of the variables ($\text{Ln } Y_t$) with respect to a given absolute change in time (t) was measured[16].

As there is no perfect parameter to measure the impact of tourism on environmental quality, a rough estimation/approximation was made. Therefore, the second set of data aims at achieving second objective pertaining to the relative growth rate of tourist and environmental variables. Further, to substantiate secondary data, a primary field survey was also conducted with well structured questionnaires and collected some relevant information from 61 foreign tourists during the period from October to December 2010. Opinions given by the tourists regarding the status of environment of the country (Bhutan) were also assessed. It was followed by personal interview with many stakeholders of tourism industry and officials of government departments.

3. Bhutan and its Tourism Policy

Before we proceed for the study of tourism, its impact and policy of the country, it is pertinent to have a brief profile of Bhutan. Basic socio-cultural information of the country will also give a brief background of the study.



Figure 1. Bhutan and its Neighbouring Nations

3.1. Brief Profile of Bhutan

Bhutan, the last Buddhist Kingdom on the earth, also known as *Druk Yul* or the *Land of Thunder Dragon*, is sandwiched between Tibet (Chinese Province) and India (refer to Fig. 1), comprising a land area of 38,394 km² with a total population of 671,083 in 2008[17]. It is one of the thinly populated countries in the world with a density of population of 18.19 people per km² in 2010[18], and most rugged mountain terrains with elevations, ranging from 160m along its southern border to its highest peak of Kula Kangri at

7,554m above sea level, and along its northern border with Tibet-Chinese region[19].

Till 1961, Bhutan lived in a self-imposed isolated manner without any metalled road, motor vehicles, electricity, telephones or postal services, and certainly no tourists[28]. They lived in a small world centred upon community kinship, family relationships and living in harmony with the natural environment[20]. In the recent years, the country has undergone a major transformation in overall development activities, especially the infrastructure sector and became one of the fastest developing nations in the world[19]. The population is primarily rural and relies on subsistence agriculture for their livelihood. Bhutan has a very rich biodiversity with diverse eco-system including many endemic and rare species, and is recognised as one of the ten global biodiversity hotspots in the world[21]. It has great potentials for developing tourism industry.

3.2. Tourism Policy of Bhutan

Bhutanese are very cautious about their environment and pay highest respect to forest and natural *environment* as it is an intrinsic part of their way of life[19]. With the apprehension of environmental degradation, lost of cultural and social values, the foreign tourist arrival in the country is controlled by a pricing policy called *High Value Low Volume*[27]. It means, the tourists must come to Bhutan on a package tour, organised by one of the Bhutanese tour operators (foreign travel agents are not allowed to operate in Bhutan) and the tour operators are supervised by the government[12]. With the objective to limit the tourist to high-end (to get more revenue with least exploitation of environment and culture), the tourism tariff rate was fixed at USD 130 per tourist per night halt when the industry was first opened to the world in 1974. With the growth of tourist, for the second time in 1989, it was raised to USD 200[11], and recently, the tariff had been revised to USD 250 per tourist per night halt with effect from January 2012[22]. Theoretically, a high-end tourist will spend more money (high tariff, luxury hotel, vehicle, etc.), stay for shorter period and reduce relative resource use, and have an expenditure pattern that directs receipts to the local host economy[5].

With the emergence of modernisation and globalisation, the tourism industry in Bhutan was privatised by the Royal Government of Bhutan (RGoB) in 1991. Today, it has become a vibrant business with nearly 200 private tour operators (who strictly follow government policy) at the helm of affairs. For efficient management and utilisation of environmental resources in the tourism industry, Frederico Neto was also in favour of privatisation of the industry[40]. In order to minimise the tourism related problems and limited infrastructures in Bhutan, number of tourists have been restricted to a manageable amount in the recent years and it is exercised through a policy of government regulated tourist tariff[10]. To encourage tourism industry and for the growth of the country's economy, income tax holiday of 10

years has been announced to newly-established high-end tourist hotels and hospitality units. Various levels of sales tax and customs duty exemptions are also being given to tourism related activities[23].

4. Contribution of Tourism on Economy

International tourism has grown substantially in recent years with technological improvements, rising living standards and broader processes of globalisation. As a result of which, the World Tourism GDP is forecasted to increase in real terms by 3.0 percent per annum in this decade[24]. Unfortunately, at present, world tourism has suffered huge loss due to economic crisis and terrorism activities[40]. However, the same was not reflected much in Bhutan. Tourism revenue to the government of Bhutan consists of royalties and taxes collected from tour operators.

The number of tourist visiting Bhutan has increased manifold from 1896 in 1985 to 28463 in 2010 (refer to annexure I). It is also expected to increase more in the coming years as the government is giving more priority in this sector. Though, tourist inflow was somewhat stagnant till 2003, thereafter, the industry picked up significantly in the country. In terms of source of markets, tourists from the United States of America continue to dominate both in terms of numbers (20.4 percent of total arrivals in 2009) and bed nights (22.3 percent of total bed nights in 2009). While Japan and the United Kingdom were the second and third largest sources of international tourists respectively, in terms of absolute figure in 2009[23].

To find out the revenue (income) elasticity with the growth of foreign tourist inflow over the period of 26 years from 1985 to 2010, a simple log linear regression model was applied and estimated elasticity from the data given in Annexure I.

$$\ln \text{TREV}_t = \alpha + \beta \ln \text{TRST}_t + \nu_t \quad (1)$$

[Where, TREV= Revenue from Foreign Tourist; TRST= Foreign Tourist Inflow; Ln= Natural Log]

$$\ln \text{TREV}_t = -7.586 + 1.103 \ln \text{TRST}_t \quad (2)$$

(-34.253) (43.216)*

* Significant at 1% level, $R^2 = 0.987$; Adj. $R^2 = 0.987$;

$F_{1,24} = 1867.63$; D-Watson = 1.711

The regression result shows that one per cent increase in tourist inflow in the country leads to 1.103 percent increase in the country's revenue. In nutshell, the elasticity of tourism revenue compared to tourist inflow in the country is greater than one (1.103). Overall fitness of the model is verified by R^2 value of 0.987 and the 't' value is significant at 1 percent level, and D-Watson value is also equal to 1.711. This shows that the intervention of the pricing policy is very significant in the context of foreign exchange earning. The hike in tariff from \$130 per night to \$200 per night has positive impact on the tourist flow. However, the impact of the recent hike in tourism tariff (from January, 2012) from \$200 to \$250 per night per person can be evaluated after 2012.

As of Indian tourists, unlike foreign tourists, they do not require to travel by luxury vehicle, stay in standard star hotels set by Bhutan government, pay tariff and make advance payments. In the recent years, the number of Indian tourist visiting Bhutan has increased significantly. According to the officials of immigrant office (Bhutan), in October 2010, as this month is considered a peak month because of the festivals in India, the issuance of permits (tourist permit issued on arrival, for Indians) went as high as 600 per day. On an average, 200 permits were issued daily in 2010. Though, the Immigration Department in Thimphu refused to share complete statistics, media report shows an average of 40,000 Indian tourists (including business activities) visit the country every year[25]. Though, no accurate estimation was made of the Indian tourist, the growth of it in Bhutan is of many folds, and that out-numbered foreign tourists, as the Bhutan improves its environment status[7]. For instance, the growth trend of Indian tourist was 20 percent in three years from 2008 to 2010 (25000 Indian tourists in 2008; it went up to 27000 in 2009 and above 30000 in 2010). Even Indian tourists can take vehicle from India. This implies that Indian tourist is considered as domestic tourist, and revenue generated from it is not considered as foreign exchange earning in Bhutan.

5. Impact of Tourism on Environment and Environmental Policy

On the environmental front, the nexus between environment and human profit making equations was explored in 1960s by Garrett Hardin[26]. The intensity of environment degradation caused by economic activities has increased significantly in the recent years. Though the impact on environment due to the growth of population and human activities is inevitable up to a certain level, it could be maintained with the help of cooperation, extension and morality of the people in the society[26]. Similarly, tourism as an economic activity and its rapid expansion has at least some detrimental effects on the pristine environment[40]. On the other hand, improvement in environmental quality attracts tourist inflow and becomes an environment-dependent industry[8]. But, it requires proper management and controlled over the tourism activities, otherwise, may lead to detrimental effect on environment ([9][40]).

5.1. Environmental Policy in Bhutan

Bhutan maintains a conservation-based policy in regard to its natural assets. Fortunately, the country is endowed with a relatively pristine environment, boasting a high percentage of forest cover and very high levels of biological diversity at the ecosystem, species and genetic levels. With almost 72 percent of the country's total area is under forest cover against the minimum of 60 percent requirement of the legislation[27][28]. With the recent addition of the Centennial Wangchuck Park in December 2008, the ratio of

protected area to total territorial area has increased from 26.3 percent in 1993 to 51.4 percent in 2008 ([17][19]).

Also, there is an extremely strong national policy framework for promoting environmental sustainability. The Constitution enshrines the protection of the environment as an important aspect of state policy under Article 5, which emphasises the responsibility of every Bhutanese to preserve environment to ensure long term sustainable use of natural resources and stipulates a minimum forest cover of legislation (60 percent of total land area), to be maintained for posterity[29]. Therefore, the economic activities that do not impede environment (like tourism) are encouraged in the country. As a result of which, Bhutan has become the largest forest coverage in proportion to its land mass in Asia, and the environmental degradation in Bhutan is still minimal or negligible compared to the neighbouring nations like, Nepal, India and other neighbouring nations ([27][30][31]). Besides, the culture of “preservation or no displacement of nature” is an important principle of *Vajrayana Buddhism* which Bhutan follows.

5.2. Growth of Tourism and its Impact on Environment

The status of environment in the country can be measured by some of the identified computable parameters and their growth/degradation trend over the years. But it is not so easy to estimate the impact of tourism on environment. Therefore, at least some approximation is needed.

In this section, three standard parameters of environment namely, Carbon dioxide Emission (CO₂), Particulate Matter Concentrations (PM10), and Natural Resources Rents (NRR), have been used (refer to Annexure II). Lesser the value Carbon dioxide (CO₂) emission given in thousand kilograms better is the quality of environment. The second variable, PM10 is expressed in terms of micrograms per cubic meter (μ/m³). It is caused by outdoor particulate matter, and causes significant health damages when it penetrates inside the respiratory tracts. The state of country's technology and pollution control is an important determinant of PM10. It has positive correlation with health hazard. The third variable, NRR is the difference between the value of natural resources production at world prices and their total costs of production. Greater the value of NRR given in percentage term better is the environment.

Table 1. Correlation Coefficients

Variables	Correlation (N=26)	Tourist	CO ₂	PM10	NRR
Tourist	Pearson Correlation	1	.844**	-.841**	-.665**
CO ₂	Pearson Correlation		1	-.988**	-.864**
PM10	Pearson Correlation			1	.887**
NRR	Pearson Correlation				1

** Correlation is significant at the 0.01 level (2-tailed).

Table 1 shows correlation coefficients of the variables that are significant at 1 percent level. From the Table, we can find that two variables— PM10 and NRR have negative correlation with number of tourist inflow and CO₂. However, CO₂ has positive correlation with tourist inflow.

As both the variables— dependent variables (environmental parameters) and independent variable (number of tourist inflow) are not co-integrated though they are correlated, we can not proceed further econometric analysis due to the shortage of data and other unexplained factors. However, to achieve our objectives of the present study, the variables have been computed in a simple growth trend over time. The growth rates of three variables with respect to time have been estimated through semi-log growth model (refer Annexure II, for time series data).

$$\ln Y_t = a + bt \quad (3)$$

Where, $\ln Y_t$ is the environmental variables in log form, 'a' is the constant, 'b' is the growth rate, and 't' represents time trend.

$$\ln \text{CO}_2 = 11.213 + 0.096 t \quad (3a)$$

$$(107.02) (14.18)^* \quad R^2 = 0.983$$

$$\ln \text{PM10} = 4.157 - 0.043 t \quad (3b)$$

$$(199.83) (-32.40)^* \quad R^2 = 0.977$$

$$\ln \text{NRR} = 3.378 - 0.016 t \quad (3c)$$

$$(47.07) (-8.33)^* \quad R^2 = 0.743$$

[* Significant at 1%; Figure in the parenthesis are the t values]

From the above equations (3a to 3c), one can find that the last two variables— PM10 and NRR grow negatively at the pace of 4.3 and 1.6 percent respectively over the twenty six years in Bhutan. It implies that with the development of technology and country's stringent law helped in improving environmental condition, as it is measured by PM10 (-4.3%). With the growth of development activities in the country, NRR and CO₂ are depleting, but at the very slow pace of 1.6 and 9.6 percent respectively.

On the other hand, to understand comparative analysis of tourism and environmental degradation rate, a relative growth trend of tourist inflow during the same period is also estimated using the same time series data (Annexure I).

$$\ln \text{Tourist} = 7.115 + 0.112 t \quad (4)$$

$$(62.65) (15.30)^* \quad R^2 = 0.975$$

* indicates significant at 1%

The difference between the values of 'b' given in the equations (3) and (4) reveals relative growth pace of environmental parameters and tourist flow respectively over the period of 26 years. Growth trend of tourist during the period was estimated at 11.2 percent, given in equation (5). This growth rate is relatively larger than the growth trend of environmental parameters (degradation rates) represented by CO₂ and NRR with the coefficients of 9.6%, 3.4% and 1.6% respectively and 11.2% of growth rate of tourist is greater than 9.6 and 1.6 environment degradation rate. Nevertheless, the improvement in environment or reducing environment declining rate by country's stringent rule and technology is 4.3 percent and it is indicated by PM10 given in equation (3b). The growth rate of tourist inflow is much higher than

the environment degradation rate in Bhutan. Though it is not verified by econometric models, the comparative growth trends of the variables clearly say that tourism has not affected the environment stock in Bhutan.

Primary survey substantiates the argument of the result given by the secondary data related to stock and status of environment (refer to Table 2). Out of 61 tourists that have been interviewed, 18 of them were found to have visited Bhutan more than once. As for the present analysis, tourists were categorised into two age groups—40 years and above; 40 years and below. Similarly, education level was also classified into two categories—degree and above; degree and below. An opinion was also asked from the 61 tourists that the tourist inflow in Bhutan in the next 5 years will degrade environment or not.

Table 2. Environmental Status Perceived by Tourists in Bhutan

(N=61) Age of Tourist	Education Level of Tourist		Purpose of Visit by Tourist to Bhutan		Environment of Bhutan is still Pristine in 2nd Visit (N=18)*		Tourism will Degrade Environment in Bhutan in 5 years	
	Degree and Above	Below Degree	Envi, Culture & Religion	Others	Yes	No	Yes	No
Age > 40	38	4	26	16	14	1	18	24
Age < 40	11	8	12	7	2	1	7	12
%	80.3	19.7	62.3	37.7	88.9	11.1	41.0	59.0

Source: Survey

* Out of the 61 tourist, 18 have visited more than once.

The Table 2 shows that the country is comparatively better than other countries, as perceived by 88.9 percent of revisited respondents (tourists visited Bhutan more than once) in the country. Altogether 59.0 percent of tourist responded that the tourism will not degrade country's environment in 5 years, and 62.3 percent of the tourists visit Bhutan due to its pristine environment, culture and tradition. This supports the secondary data and signifies that the country's environment has still not been disturbed much by the tourism industry. Small rate of environmental degradation might have been contributed by other economic activities like infrastructure development works[31].

6. Stock of Environment, Depleting Factors and Tourism Limit

It is very important to have some knowledge of the stock of country's environment and its depleting factors, as tourism is identified as environment-dependent industry and for understanding threshold level of tourist inflow in the country.

6.1. Stock of Environment in Bhutan

According to land cover assessment study based on the satellite images, forest cover has increased from 64.36 per cent in 2006 to 70.46 per cent in 2010[29]. The shrub cover has also increased from 8.13 percent to 10.43 percent during the same period. The overall forest cover (forest plus shrub) has, therefore, increased from 72.5 percent in 1995 to 81.27 percent in 2010. Thus, it is well above the constitutional requirement of 60 percent forest area in the country[20]. This makes Bhutan the 17th most forested country in the world, much ahead of the other SAARC countries which have alarmingly low forest cover, e.g. Sri Lanka, India and Nepal (<30%); Bangladesh (<11%) while Afghanistan, Pakistan and Maldives (<4%)[32].

Bhutan's ecological footprint was rated at 1.0 as compared to 1.6 for Asia and 2.7 for the world according to the *WWF Living Planet Index* 2008 (lesser the value, better is the environment). In terms of the ecological reserve or deficit, the rating for Bhutan was 0.8 as compared to -0.8 in the Asia/Pacific region and was rated the best in South Asia. Bhutan's bio-capacity rating was also assessed at 1.8 as compared to 0.8 for the Asia Pacific region[29]. The air and water quality in Bhutan are still relatively good, compared to the neighbouring nations. The *Respirable Particulate Matter* (PM10) was found to be a concentration of 20 $\mu\text{g}/\text{m}^3$ (measured at Thimphu, capital city of the Kingdom) in 2009, which are significantly lower (lower value of PM10, better is the environment) than the United States and European Union stipulated standards of 50 and 40 $\mu\text{g}/\text{m}^3$ respectively. This implies that the other parts of the country will be much lower than the capital city, Thimphu, as it is the most congested and populous city in the country. In terms of Ozone Depleting Substances (ODS), as the *Vienna Convention* and the *Montreal Protocol* in 2004 was bound to decrease its annual import of ODS by half. It has exceeded its target to reduce ODS import by 72 percent in a year, from 170 kg to 63 kg in the country, which was achieved after a complete ban was imposed from January 2005 on ODS-based equipment and the promulgation of ODS licensing system in 2005. The nationwide survey conducted by the Ozone unit of the National Environment Commission (NEC) found that ODS in use in Bhutan was about 2,500 kg, and of which about 450 kg were used by nine major industries (manufacturing). In the world, Bhutan is in the low volume consumption category, which means, it consumes less than 30 tonnes of ODS a year[33].

6.2. Some of the Environmental Depleting Factors

With the emergence of globalisation and growth of the country's infrastructural development activities, some detrimental effect on environment is being perceived by the country[19]. The main factors responsible are the soil erosion, vehicle emission, urbanisation and industrialisation, and water pollution, etc.,[13][31]. The soil erosion occurs because of the fact that approximately 50 percent of the land in Bhutan is situated on mountainous slopes which are subject to landslides during the monsoon season[31]. Other contributing factors affecting environment in the country are over-cutting of timber, road construction, and the building of irrigation channels[19].

Though the tourism industry was not rated as pollutant, the recent growth of tourist flow in the country has made some complaints that the modest number of trekkers are damaging Bhutan's environment, leaving behind litter and eroding habitat[2]. As experienced in Sikkim (India) and Nepal, on an average, 1 kg of non-biodegradable garbage is generated by a tourist during their trekking, and little more than 1 kg of non-burnable per day[34]. In reality, the share of trekker to the overall tourist population is very negligible and declining in Bhutan. To quantify roughly, the share of trekkers in 2006 was 13.3 per cent; 12.2 per cent in 2007, and slightly increased to 15.1 per cent in 2008 and again fell down to 10.2 per cent in 2009[23]. In totality, the impact of trekkers on the country's environment is not an issue till today compared to other economic activities.

6.3. Threshold Level of Tourist

Though Bhutan is a costlier place for the international tourists, it is chosen as one of the most preferred destinations in the world[7]. It is basically due to its pristine environment, culture and internal security on one hand, and recent terrorist activities and different forms of agitations and violence erupted in different parts of the world on the other[40]. Despite high tariff, the number of tourist visiting Bhutan has been increasing substantially in the recent years. It is evident that the tourism demand was not affected much by the tourist eco-taxes (tariff) in Hvar Island[9], Netherlands' Antilles [40]. The tax is relatively a small part of the total cost of a trip, if the destination is worth visiting. Therefore, pricing policy of tourism in Bhutan did not affect the tourist inflow in the country. But the tariff (tax) collected from the tourists should be utilised for preservation of environment and sustainable development of tourism in the country[35]. Otherwise, tourism is at stake of being a self-destructive process, destroying the very resources upon which it is based[40]. It would often not only degrades environment of the host country but also increases the level of crime, prostitution and drug use into local communities and effects the manipulation of their cultural traditions[36], which Bhutan has been very much cautious of for a long time. The ratio between number of tourist and country's citizen has reached to 1:3 (in the year 2009, the total tourists visited was 23480 and country's population was 69735). But it is still out of danger and manageable. However, in Hvar Island in 2005,

the ratio was 3:1 but still the environment was not affected much in the Island[9].

Besides, in the long run, tourism does not create high negative impact on overall environmental condition of the country due to three factors ([2][23]). First, the trekking and tourism rules and regulations are stringent in Bhutan. Second, most visitors are educated, well-to-do communities and mostly older than 40 years (refer Table 2). Third, their main objective for visiting Bhutan is to witness the pristine natural environment and the beauty of the landscape (as Table 2). Also, the tour operators are being trained in a regular interval by the government in the country[22].

In nutshell, tourism industry in Bhutan is still below the *Tourism Carrying Capacity*[37]. Since the numbers of tourists are quite low compared to the stock of the environment, no major environmental degradation attributable to tourists is visible as of now. To support this argument, Mr. Thuji Dorji Nadik (Tourism Council of Bhutan) commented that the *Limits to Acceptable Change*[38] of tourism industry is still positive in Bhutan (email interviewed by the author). Country's tourism policy of HVLV has succeeded in balancing the two divergent issues— economic growth contributed by tourism and preserving pristine environment. Bhutan can increase the limit of tourist inflow till it reaches the environment degradation rate (as given in equation 3).

7. Precautions for Tourism and Environment

It is seen from the above analysis that the growth of foreign tourist in the country has positive impact on the economic growth at the same time it does not have much negative impact on environment in the country. As the number Indian tourist is not properly managed and controlled, it may have some detrimental effect not only on the environment, but also on the socio-cultural equation[7]. The rapidly expanding economy of India on one hand and Bhutan's highly attractive tourism assets, its low population density, and proximity to India on the other, will have some detrimental effect in Bhutan's tourism policy in future. Indian tourists have out-numbered foreign tourists, as they do not need to pay tariff, visa, less spenders in terms of hotel, transportation and other consumptions, etc. The basic reasons for increasing number of Indian tourists visiting Bhutan has three factors – 1) the unrest situations in many parts of the country's tourist destinations like, Agra, Kashmir, Mumbai, and other hill stations of Darjeeling, Sikkim and North Eastern Region states which are very close to Bhutan, 2) Bhutanese currency is pegged with Indian rupee, and that does not have exchange rate difference, and 3) no visa or restriction for Indian to visit Bhutan.

According to Thinley W. Dorji of *Bhutan Tourism Corporation Limited* (as interviewed by survey team) opined that finding accommodation for the tourists was the biggest glitch, especially during the festival season (e.g. Paro

Tshechu, Coronation of King). At present, altogether 35-40 standard hotels approved by the government are available in Bhutan. These hotels are small in size with the capacity of maximum 52 rooms (ranges from 15 to 52 rooms), e.g. *Hotel Druk* in Thimphu has only 52 rooms[39]. Though the quality of service and facilities may differ but usually tourists are generally kept in all the hotels, resorts, guest houses and lodges approved by government. When Indian tourists are added during the peak season, it may create some shortage of accommodation because of infrastructure and accommodation constraints in the country.

8. Conclusions and Suggestions

To conclude, only a few thousand foreign tourists (e.g. 28463 tourists in 2010) visiting Bhutan is not an issue compared to the stock of country's environment[7]. With the available stock of environment, Bhutan still can increase number of tourist inflow till it reaches equilibrium level, where the growth rate of tourist and the degradation rate of environmental parameters become equal. Unlike the people from other economic activities, literally tourists are educated, financially sound and civilised people. Besides, they are fully guided by the trained tourist operators, and not left free to them during their stay in the country[10]. There is no need to be panic much for degradation of country's environment by foreign tourists. However, stringent state policy should not be loosened. Some negligible exploitation of natural resources, vegetations made by the tourists (especially during the trekking) can be easily rejuvenated during the off season (as tourists do not go for trekking during rainy season). Pace of growth of forest vegetation in Bhutan is faster than the rate of destruction made by the few thousand foreign tourists. Therefore, the HVLV of Bhutan can be considered as an effective policy in balancing economy and environment. However, the major issue of tourism in Bhutan remains with Indian tourists, if not exposed. As Indian tourists are not properly monitored and controlled, it may have some negative impact on country's environment in the near future.

Some of the possible suggestions for the development of tourism industry and at the same time for preservation of environment and culture in Bhutan are given below.

1. As the growth of Indian tourists in the recent years has outnumbered foreign tourist, some basic necessary regulations are to be made. For instances, nominal environmental tax requires to be imposed and at the same time the collected amount is to be utilised exclusively for preservation of environment[9]. Indian tourists should also be guided by trained tour operators, to check the over exploitation of resources.

2. To accommodate more foreign tourist especially during the festival season in the country, some more accommodations of the world class hotel and guest houses are to be built, and other basic infrastructures facilities should be created by the government, also by the private partners[40].

3. The visit of the tourists should be arranged spatially across the seasons, not rushing only in the festival seasons. Besides, tourist visit should also be arranged rotationally across the length and breadth of the tourist destinations of the country with mutual communication and cooperation among the tour operators, in order to reduce congestion in the tourist spots.

4. Strong institutional structure and stringent rule of the country is to be still strengthened while implementing the public policy. Besides, international investors in the sector are to be welcome.

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Annexure 1: Tourist Inflow and Revenue

Year	No. of Foreign Tourist	Tourism Revenue in US \$ Million	% of Tourism Revenue to GDP	GDP Growth Rate (year to year)
1985	1896	1.67	1.0	4.4
1986	2405	2.16	1.1	8.0
1987	2524	3.40	1.5	20.2
1988	2129	2.00	0.8	15.1
1989	1480	1.95	0.7	6.2
1990	1528	1.91	0.7	9.1
1991	2106	2.30	0.9	4.9
1992	2763	2.99	1.3	2.1
1993	2984	3.30	1.5	3.2
1994	3971	3.97	1.6	3.5
1995	4769	6.00	2.1	6.0
1996	5138	6.51	2.2	6.2
1997	5363	6.50	1.9	5.4
1998	6204	7.98	2.2	5.6
1999	7051	8.70	2.2	6.9
2000	7559	9.90	2.3	7.5
2001	6393	9.20	2.0	7.0
2002	5599	7.98	1.6	8.9
2003	6261	8.32	1.4	8.6
2004	9249	12.50	1.8	8.0
2005	13626	18.50	2.3	8.8
2006	17342	23.90	2.7	6.9
2007	21094	29.90	2.5	17.9
2008	27636	38.80	3.1	4.7
2009	23480	31.90	2.5	6.7
2010	28463	39.50	2.6	7.4

Source: ([10][12][18][21][23])

Annexure 2: Stock of Environment in Bhutan

Year	Natural Resources Rents (%)	CO ₂ (in '000 kg)	PM10 (μm^3)
1985	25.51	62290	56.5
1986	26.09	54960	55.0
1987	26.00	102590	53.4
1988	21.62	109920	51.9
1989	20.27	62290	50.4
1990	21.00	128240	47.5
1991	24.74	186860	47.1
1992	26.44	216180	46.1
1993	27.01	186860	45.9
1994	24.88	212510	43.0
1995	23.34	249150	41.9
1996	21.24	304110	39.3
1997	17.93	395710	37.8
1998	17.06	384720	36.1
1999	16.77	384720	35.7
2000	15.45	399380	33.7
2001	14.21	414030	31.9
2002	13.42	512960	29.8
2003	11.38	465330	28.4
2004	10.59	468990	26.5
2005	9.49	564260	25.2
2006	9.29	545940	24.3
2007	14.02	578910	23.1
2008	11.46	583199	22.4
2009	14.40	663431	19.7
2010	13.59	678963	18.2

Source:[18]

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